

## Cobra Invitational January 24, 2015

### Can't Judge A Powder – Part 2

#### Instructions:

You will have **20 minutes** for Part 2

You will use your observations from Part 1 to answer the questions in Part 2

You will be provided with a **different color pen** from Part 1

Using only this new pen, **answer** the questions on these pages by **writing the number(s) of the observation(s) from Part 1 that answer the questions in the associated Evidence Number block**. Some questions may have multiple observations that answer the question. If you know the answer to a question, but do not have that observation written in part 1, you may add it at the end of your observation list in the new pen color for partial credit.

**Remember, you MUST write the number of the observation in the Evidence Number block in order to answer each question.**

**Question 21 is first tie-breaker.**

**Second tie-breaker would be overall quality of the observations.**

Write your school number and both names:

<u>Powder Observations</u>	<u>Evidence Number</u>	<u>Score</u> <u>(DO NOT MARK</u> <u>IN THIS AREA)</u>
<u>1. Describe the appearance of the substance.</u>		<u>0 1 2 3 4 5</u>
<u>2. Was your powder amorphous or crystalline?</u>		<u>0 1 2 3 4 5</u>
<u>3. Was the powder(substance) hygroscopic?</u>		<u>0 1 2 3 4 5</u>
<u>4. What was the number on your unknown bag?</u>		<u>0 1 2 3 4 5</u>
<u>5. Was the powder hydrophobic or hydrophilic?</u>		<u>0 1 2 3 4 5</u>
<u>6. As the substance dissolved in water, was it endothermic or exothermic?</u>		<u>0 1 2 3 4 5</u>
<u>7. Was the density of the powder greater or lower than water?</u>		<u>0 1 2 3 4 5</u>

<b><u>Powder Observations</u></b>	<b><u>Evidence Number</u></b>	<b><u>Score</u> <u>(DO NOT MARK</u> <u>IN THIS AREA)</u></b>
<b><u>8. Was the aqueous solution of powder ionic or covalent?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>9. Was aqueous solution of powder a weak base.....a strong base..... Neutral.....a weak acid.....a strong base?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>10. When added to 1M HCl, was there effervescence?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>11. Is the powder/water mixture more or less ionic than Solution X?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>12. Was the substance more soluble in water or acid?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>13. Was there a reaction when powder was added to base?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>14. Was a precipitate formed when the substance was added to base? If so, describe the precipitate?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>15. Was a precipitate formed when the substance was added to acid? If so, describe the precipitate?</u></b>		<b><u>0 1 2 3 4 5</u></b>

<b><u>HCl and HCl/Powder Observations</u></b>	<b><u>Evidence Number</u></b>	<b><u>Score</u> <u>(DO NOT MARK</u> <u>IN THIS AREA)</u></b>
<b><u>16. The precipitate formed could be dissolved using HCL. List the observation where it dissolved?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>17. What color was solution X?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>18. Was there a reaction when aluminum foil was added to aqueous solution of the powder? Describe why there was no reaction.</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>19. What happened to Aluminum foil when added to solution X?</u></b>		<b><u>0 1 2 3 4 5</u></b>
<b><u>20. Arrange the solutions provided from most acidic to most basic and record the observation number below each solution?</u></b> <b><u>Most acidic .....Most basic</u></b> <b><u>Observations.....</u></b>		<b><u>0 1 2 3 4 5</u></b> <b><u>0 1 2 3 4 5</u></b>
<b><u>21. What was the concentration of the acid provided?</u></b>		<b><u>0 1 2 3 4 5</u></b> <b><u>Tie Breaker</u></b>